
PART I - ADMINISTRATIVE

Section 1. General administrative information

Title of project

Evaluate Return Flow Recovery

BPA project number: 20150

Contract renewal date (mm/yyyy): ☐ Multiple actions?

Business name of agency, institution or organization requesting funding

Roza-Sunnyside Board of Joint Control

Business acronym (if appropriate) RSBOJC

Proposal contact person or principal investigator:

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NPPC Program Measure Number(s) which this project addresses

Section 7.6

FWS/NMFS Biological Opinion Number(s) which this project addresses

Other planning document references

Short description

Evaluate the feasibility of recovering water from the Granger Drain for reuse in the irrigation distribution system.

Target species

Chinook, Coho, Sockeye, Steelhead, Bull Trout, Cutthroat, Brown Trout, Brook Trout

Section 2. Sorting and evaluation

Subbasin

Evaluation Process Sort

CBFWA caucus	Special evaluation process	ISRP project type
Mark one or more caucus	If your project fits either of these processes, mark one or both	Mark one or more categories
<input checked="" type="checkbox"/> Anadromous fish <input type="checkbox"/> Resident fish <input type="checkbox"/> Wildlife	<input type="checkbox"/> Multi-year (milestone-based evaluation) <input checked="" type="checkbox"/> Watershed project evaluation	<input type="checkbox"/> Watershed councils/model watersheds <input type="checkbox"/> Information dissemination <input type="checkbox"/> Operation & maintenance <input type="checkbox"/> New construction <input type="checkbox"/> Research & monitoring <input checked="" type="checkbox"/> Implementation & management <input type="checkbox"/> Wildlife habitat acquisitions

Section 3. Relationships to other Bonneville projects

Umbrella / sub-proposal relationships. List umbrella project first.

Project #	Project title/description
20526	Multi-Year Plan Yakima Anadromous Fish Plan

Other dependent or critically-related projects

Project #	Project title/description	Nature of relationship

Section 4. Objectives, tasks and schedules

Past accomplishments

Year	Accomplishment	Met biological objectives?

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Evaluate feasibility of drain water reuse	a	Conduct a feasibility study to evaluate the feasibility of reusing drain water from the Granger Drain for irrigation purposes.

Objective schedules and costs

Obj #	Start date mm/yyyy	End date mm/yyyy	Measureable biological objective(s)	Milestone	FY2000 Cost %
1	10/1999	10/2000			1
				Total	100.00%

Schedule constraints

No constraints have been identified that would affect the schedule.

Completion date

2000

Section 5. Budget**FY99 project budget (BPA obligated):****FY2000 budget by line item**

Item	Note	% of total	FY2000
Personnel	RSBOJC Staff	% 14	5,000
Fringe benefits		% 7	2,500
Supplies, materials, non-expendable property		% 0	
Operations & maintenance		% 0	
Capital acquisitions or improvements (e.g. land, buildings, major equip.)		% 0	
NEPA costs		% 0	

Construction-related support		%0	
PIT tags	# of tags:	%0	
Travel		%0	
Indirect costs	Office overhead	%1	500
Subcontractor	Feasibility Study by Consultant	%77	27,000
Other		%0	
TOTAL BPA FY2000 BUDGET REQUEST			\$35,000

Cost sharing

Organization	Item or service provided	% total project cost (incl. BPA)	Amount (\$)
		%0	
		%0	
		%0	
		%0	
Total project cost (including BPA portion)			\$35,000

Outyear costs

	FY2001	FY02	FY03	FY04
Total budget				

Section 6. References

Watershed?	Reference
<input checked="" type="checkbox"/>	CH2M HILL, 1975. Agricultural Return Flow Management in the State of Washington. Prepared for Washington State Department of Ecology.
<input checked="" type="checkbox"/>	Department of Ecology, 1990. Statewide Water Quality Assessment 350 (B) Report, State of Washington.
<input checked="" type="checkbox"/>	USGS, 1976. Sediment Transport by Irrigation Return Flows in the Lower Yakima River Basin, WASHINGTON. Open File Report 78-946.
<input checked="" type="checkbox"/>	Joy, J. and Patterson, B. 1997 A suspended sediment and DDT total maximum daily load evaluation reprot for the Yakima River: Washington State Department of Ecology, Environmental Investigatons and Laboratory Services Program, Watershed Assessment Se
<input checked="" type="checkbox"/>	Rinella, J.F., McKenzie, S.W., Fuhrer, G.J., 1992, Surface-water-quality assessment of the Yakima River Basin, Washington, analysis of available water-quality data through 1985 water year: Geological Survey, Open-File Report 91-453, 244p.

PART II - NARRATIVE

Section 7. Abstract

A network of major drainage waterways drains the irrigated lands within the Roza-Sunnyside Board of Joint Control (RSBOJC) service area. These waterways represent a potential source of water that could be reused for irrigation. The proposed return flow recovery program would enhance the irrigation water supply for the RSBOJC while reducing the quantity of sediment discharged to the Yakima River. This project will focus on the Granger Drain, which has been identified as a significant source of suspended sediments among other pollutants.

Section 8. Project description

a. Technical and/or scientific background

The lower Yakima River basin has been identified as one of the most intensively irrigated and agriculturally diverse regions in the United States. More than 325,000 acres of cropland is being irrigated in the Yakima Valley and a vast network of drains exist to convey excess water, in the form of irrigation- and agricultural-return flows, to the Yakima River. These return flows can account for as much as 80 percent of the lower Yakima River main-stem flow during the irrigation season. Return flows are seriously polluted and, as a result, the lower Yakima River exceeds permissible state standards for DDT, Ammonia and other nutrients, temperature and turbidity. Because of these conditions, the Yakima River has been listed as impaired under the Federal Clean Water Act. Once abundant salmon and steelhead populations have dwindled to precariously low levels and other beneficial uses of the Yakima River water are in jeopardy. Consequently, the quality of the water in the lower Yakima River is highly dependent upon the quality of these agricultural-return flows (Joy and Patterson, 1997).

The movement of suspended sediment in streams is an important factor in the transport and fate of chemicals in the environment. Many water-quality constituents including trace metals, organic compounds, indicator bacteria, and nutrients are associated with suspended sediment. Large suspended-sediment concentrations and associated contaminants can potentially affect water used for domestic-water supplies, aquatic-life propagation, and recreation (Rinella *et al.*, 1992). Sediment, predators and lack of side-channel refuges limit juvenile rearing and over-wintering survival. Sediment also limits egg-to-fry emergence survival for all species of salmonid in virtually all reaches of the Yakima Basin.

Water quality studies performed in the mid-1970's through the mid-1990's by Ecology, the U.S. Geological Survey, Washington State University, Conservation Districts, the United States Bureau of Reclamation (USBR), and others focused on irrigated agricultural areas in the lower Yakima River basin. Results from these studies indicated that suspended-sediment concentrations and turbidity in agricultural-return drains, and in

the lower Yakima River, were directly affected by irrigation practices (Joy and Patterson, 1997). In fact, irrigation return flow has been identified as the single most significant source of pollutants to the lower Yakima River (Ecology, 1986).

The RSBOJC proposes that a feasibility study be done on irrigation return flow from the Granger Drain. This drain water can be recovered and used to enhance the irrigation supply. The polluted water would be reused instead of degrading the lower Yakima River.

On specific site has been identified as a possible location for the proposed return flow recovery system. Additional sites have been tentatively identified and would be evaluated at a later time.

b. Rationale and significance to Regional Programs

The concept of reusing return flows fits into the goals and objectives of Section 7.6 of the Fish and Wildlife Program. This would be a positive action taken to rehabilitate the watershed in the interest of restoring salmon and steelhead stocks.

c. Relationships to other projects

The feasibility study on return flow reuse relates to many other projects in the lower Yakima Valley. All projects are trying to improve water-quality and the restoration of the watershed.

d. Project history (for ongoing projects)

N/A

e. Proposal objectives

OBJECTIVE 1: Evaluate feasibility of drain water reuse
RSBOJC proposes a feasibility study to evaluate the possibility and economics of reusing drain water from the Granger Drain for irrigation purposes and water-quality purposes in the Yakima River.

f. Methods

A consultant will do evaluation of the feasibility of the return flow recovery system for the Granger Drain when funds are available. The study will take water supply, water quality, and impact to the Granger Drain and economics into consideration. The feasibility project could proceed in 1999.

g. Facilities and equipment

The administrative work needed to oversee the return flow recovery system feasibility study is similar to the type of work regularly performed by the RSBOJC staff. It is anticipated that a consultant will be used for most of the work to complete the feasibility study.

h. Budget

The cost of RSBOJC staff will be \$5,000. Fringe benefits will total \$2,500. Office overhead will cost \$500 and the consultant cost will be budgeted at \$27,000. The total cost of the budget will be \$35,000.

Section 9. Key personnel

RSBOJC staff will manage the work. A consultant will be retained to complete the feasibility study.

Section 10. Information/technology transfer

The project is expected to serve as a demonstration of the benefits that can be achieved by managing the quantity and quality of water that returns to irrigation and drainage waterways as a source of water supply. This concept could be applied to many other irrigation and drainage projects.

Congratulations!